

# PATENT ABSTRACTS OF JAPAN

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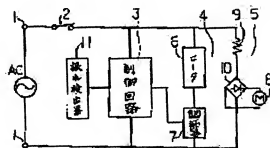
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## (54) HAIR DRIER

### (57)Abstract:

PURPOSE: To vary the temperature of warm blast only by varying the swinging of a hair drier for improving the operability and utility by detecting the swing of the hair drier and varying heating capacity of the heater with a heating control means according to the detected result.

CONSTITUTION: For example, a ball is movably received in a case to detect the swing of a blow-off port of a hair drier, and a swing detector 11 is provided which is constituted to detect the movement of the ball with a sensor. In using the drier, the output signal of the swing detector 11 is inputted to a control circuit 3 to obtain the number of times of the drier's swing per unit time for judging the condition of the drier being used. Namely, three conditions, i.e., 'hair combing condition' under which the drier is almost stopped, 'drying condition' under which the drier is swung from the hair combing condition and 'quick drying condition' under which the drier is further frequently swung are judged. An electrification regulator 7 is controlled according to the judging result to vary the heat generating amount of a heater 6, i.e., temperature of warm air.



## LEGAL STATUS

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22.04.1998

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rejection]

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decision of rejection]

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DETAILED DESCRIPTION

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## [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the drier which carries out adjustable [ of the calorific value of a heater ] automatically according to the busy condition of a drier.

[0002]

[Description of the Prior Art] The conventional drier was the configuration of setting up the strength of warm air temperature with a manual switch each time, and once it set it up, it was the configuration that the warm air of whenever [ about 1 constant temperature ] was obtained, as shown in JP,57-89806,A. However, when it continues applying warm air to the fixed location of hair by making a dryer into a quiescent state like [ in the case of preparing hair ], the part will be in overheating and there is a problem that hair and the scalp hurt. Although what is necessary is to operate a manual switch and just to have switched warm air temperature to the low temperature side, in order to prevent this, there was a problem that the actuation was troublesome.

[0003]

[Problem(s) to be Solved by the Invention] This invention solves the above-mentioned trouble and offers the dryer which can switch the temperature of warm air automatically according to the busy condition of a dryer.

[0004]

[Means for Solving the Problem] This invention is considered as the configuration which established a detection means to detect the deflection of a dryer, and the heating control means which carries out adjustable [ of the calorific value of said heater ] according to the output of this detection means in a drier equipped with a heater and a ventilation machine.

[0005]

[Function] Since this invention is constituted as mentioned above, with a detection means to detect the deflection of a dryer Distinction in the condition that the dryer was shaken frequently and warm air has been equivalent to hair broadly, and the condition that the dryer was held at the quiescent state and warm air has been equivalent to the fixed location of hair is attained. In the case of the former, it acts so that may make warm air temperature high, drying efficiency may be raised, warm air temperature may be made low on the other hand in the case of the latter and fault heating of hair or the scalp may be prevented.

[0006]

[Example] Drawing 1 is the circuit diagram showing one example of the drier of this invention. In this drawing, a power supply terminal (1) and (1) are connected to a source power supply (AC), and current supply is performed to a drier by closing an electric power switch (2). A source power supply (AC) is supplied to a control circuit (3), a heating circuit (4), and a motor circuit (5). The control circuit (3) is equipped with microcomputer PYUTA which memorized the predetermined program beforehand, the power circuit which supplies the power source of this microcomputer PYUTA of operation.

[0007] A heating circuit (4) carries out series connection of the energization controller (7) which controls the energization to the heater (6) which constitutes a heater, and this heater (6), and carries out adjustable [ of the calorific value ], and constitutes it. The energization controller (7) constitutes the duty factor of a heater (6) from solid-state-switching components, such as a triac set as

arbitration. A motor circuit (5) constitutes the ventilation machine turning around the fan who attached in the revolving shaft of a motor (8), carries out series connection of the full wave rectifier (10) to pressure-lowering resistance (9), and is considering it as the configuration which connected the motor (8) to the full wave rectifier (10). And the fan who attached in the heater (6) and the motor (8) has attached in the predetermined location of a drier so that air may be incorporated from an inlet, the air may be heated and the regurgitation of the warm air may be carried out from an outlet.

[0008] The deflection detector (11) for moving and detecting especially the deflection of an outlet is attached in the drier. This detector consists of sensors which detect migration of the case fixed to the predetermined location of a dryer, the ball contained free [ migration into this case ], and this ball according to the about several cm deflection of an outlet. This sensor detects a ball optically, magnetically, or electrically, and should just use the thing of a configuration of that an output changes according to a motion of a ball. And the output of a deflection detector (11) is supplied to a control circuit (3), and a control circuit (3) asks for the count of a deflection of the dryer per unit time amount based on the existence of the output, and distinguishes the busy condition of a dryer according to the count.

[0009] In the above-mentioned configuration, if an electric power switch (2) is closed after connecting a power supply terminal (1) and (1) to a source power supply (AC), it will energize in a motor circuit (5), and a fan rotates at a predetermined rotational frequency, and ventilation of a constant rate is started. On the other hand, based on the output of a detector (11), a control circuit (3) supervises the busy condition of a dryer, and adjusts the calorific value of a heater (6). The busy condition of a dryer judges a busy condition by asking for the count of an output of per unit time amount (for example, for 5 seconds) of a detector (11), and making the count into the frequency of the deflection of a dryer.

[0010] And as shown in drawing 2, when, as for a control circuit (3), the frequency of the deflection of a dryer becomes beyond the predetermined value A (for example, 5), it is this drawing AL-AH. An energization controller (7) is controlled so that the calorific value of a heater (6) rises, as the frequency of a deflection increases so that it may be shown. consequently, the frequency of a deflection increases -- it is alike, and it follows, the temperature of warm air rises, and frequency decreases conversely -- it is alike, and it follows and the temperature of warm air descends.

Therefore, since the temperature of warm air rises as a dryer is moved frequently even if it is the case where the amount of heat-receiving per unit area decreases, like when drying the wet whole hair, the amount of heat-receiving per unit area increases, and drying efficiency of hair can be improved.

Moreover, if a dryer is shaken intentionally in the location to heat hair locally, even if it does not operate especially a switch, the temperature of warm air can be raised simply. On the other hand, like [ in the case of preparing hair ], in applying warm air locally, since a dryer is seldom shaken, warm air temperature falls and it suppresses the temperature rise beyond the need for hair or the scalp.

[0011]

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CLAIMS

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[Claim(s)]

[Claim 1] The drier characterized by establishing a detection means to detect the deflection of a dryer, and the heating control means which carries out adjustable [ of the calorific value of said heater ] according to the output of this detection means in a drier equipped with a heater and a ventilation machine.

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TECHNICAL FIELD

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[Industrial Application] This invention relates to the drier which carries out adjustable [ of the calorific value of a heater ] automatically according to the busy condition of a drier.

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PRIOR ART

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[Description of the Prior Art] The conventional drier was the configuration of setting up the strength of warm air temperature with a manual switch each time, and once it set it up, it was the configuration that the warm air of whenever [ about 1 constant temperature ] was obtained, as shown in JP,57-89806,A. However, when it continues applying warm air to the fixed location of hair by making a dryer into a quiescent state like [ in the case of preparing hair ], the part will be in overheating and there is a problem that hair and the scalp hurt. Although what is necessary is to operate a manual switch and just to have switched warm air temperature to the low temperature side, in order to prevent this, there was a problem that the actuation was troublesome.

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EFFECT OF THE INVENTION

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[Effect of the Invention] Since the temperature of warm air is changeable only by changing how shaking a drier as mentioned above according to this invention, a switch of the warm air temperature by the manual operation of a switch can be excluded, and desiccation of hair and the operability at the time of hairdressing can be improved more.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] This invention solves the above-mentioned trouble and offers the drier which can switch the temperature of warm air automatically according to the busy condition of a dryer.

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MEANS

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[Means for Solving the Problem] This invention is considered as the configuration which established a detection means to detect the deflection of a dryer, and the heating control means which carries out adjustable [ of the calorific value of said heater ] according to the output of this detection means in a drier equipped with a heater and a ventilation machine.

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OPERATION

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[Function] Since this invention is constituted as mentioned above, with a detection means to detect the deflection of a dryer Distinction in the condition that the dryer was shaken frequently and warm air has been equivalent to hair broadly, and the condition that the dryer was held at the quiescent state and warm air has been equivalent to the fixed location of hair is attained. In the case of the former, it acts so that may make warm air temperature high, drying efficiency may be raised, warm air temperature may be made low on the other hand in the case of the latter and fault heating of hair or the scalp may be prevented.

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## EXAMPLE

[Example] Drawing 1 is the circuit diagram showing one example of the drier of this invention. In this drawing, a power supply terminal (1) and (1) are connected to a source power supply (AC), and current supply is performed to a drier by closing an electric power switch (2). A source power supply (AC) is supplied to a control circuit (3), a heating circuit (4), and a motor circuit (5). The control circuit (3) is equipped with microcomputer PYUTA which memorized the predetermined program beforehand, the power circuit which supplies the power source of this microcomputer PYUTA of operation.

[0007] A heating circuit (4) carries out series connection of the energization controller (7) which controls the energization to the heater (6) which constitutes a heater, and this heater (6), and carries out adjustable [ of the calorific value ], and constitutes it. The energization controller (7) constitutes the duty factor of a heater (6) from solid-state-switching components, such as a triac set as arbitration. A motor circuit (5) constitutes the ventilation machine turning around the fan who attached in the revolving shaft of a motor (8), carries out series connection of the full wave rectifier (10) to pressure-lowering resistance (9), and is considering it as the configuration which connected the motor (8) to the full wave rectifier (10). And the fan who attached in the heater (6) and the motor (8) has attached in the predetermined location of a drier so that air may be incorporated from an inlet, the air may be heated and the regurgitation of the warm air may be carried out from an outlet.

[0008] The deflection detector (11) for moving and detecting especially the deflection of an outlet is attached in the drier. This detector consists of sensors which detect migration of the case fixed to the predetermined location of a dryer, the ball contained free [ migration into this case ], and this ball according to the about several cm deflection of an outlet. This sensor detects a ball optically, magnetically, or electrically, and should just use the thing of a configuration of that an output changes according to a motion of a ball. And the output of a deflection detector (11) is supplied to a control circuit (3), and a control circuit (3) asks for the count of a deflection of the dryer per unit time amount based on the existence of the output, and distinguishes the busy condition of a dryer according to the count.

[0009] In the above-mentioned configuration, if an electric power switch (2) is closed after connecting a power supply terminal (1) and (1) to a source power supply (AC), it will energize in a motor circuit (5), and a fan rotates at a predetermined rotational frequency, and ventilation of a constant rate is started. On the other hand, based on the output of a detector (11), a control circuit (3) supervises the busy condition of a dryer, and adjusts the calorific value of a heater (6). The busy condition of a dryer judges a busy condition by asking for the count of an output of per unit time amount (for example, for 5 seconds) of a detector (11), and making the count into the frequency of the deflection of a dryer.

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Therefore, since the temperature of warm air rises as a dryer is moved frequently even if it is the case where the amount of heat-receiving per unit area decreases, like when drying the wet whole hair, the

amount of heat-receiving per unit area increases, and drying efficiency of hair can be improved. Moreover, if a dryer is shaken intentionally in the location to heat hair locally, even if it does not operate especially a switch, the temperature of warm air can be raised simply. On the other hand, like [ in the case of preparing hair ], in applying warm air locally, since a dryer is seldom shaken, warm air temperature falls and it suppresses the temperature rise beyond the need for hair or the scalp. [0011] Moreover, a control circuit (3) will control an energization controller (7) to intercept the energization to a heater (6) temporarily, as shown in this drawing BL-BH, if the frequency of the deflection of a dryer falls gradually and becomes below the predetermined value B (for example, 2). Consequently, applying cold blast and cooling, if a user holds a dryer to a quiescent state intentionally, cold blast can be generated to harden the hairstyle heated and prepared. In addition, since warm air can be again generated if a dryer is shaken several times, it can have its hair cut easily in another location which hairdressing has not finished. [0012] Moreover, when the dryer after use is left, since the energization to a heating circuit (4) is intercepted automatically, an outbreak of the fire according to overheating as if waste of power can be held down can be prevented beforehand. In addition, the above-mentioned heating circuit (4) can also be constituted not only using this but using a relay circuit etc., although the solid-state-switching component was used as an energization controller (7). Moreover, although the heating circuit (4) adjusted the duty factor to a heater (6) with the energization controller (7) and carried out adjustable [ of the calorific value ], it can also be considered as the configuration which changes the resistance of a heater (6) and carries out adjustable [ of the calorific value ]. Moreover, although the motor circuit (5) rotated the motor (8) at the predetermined rotational frequency so that fixed ventilation might be performed, it can carry out adjustable [ of the rotational frequency of a motor (8) ] like a heating circuit (4) according to the output of a deflection detector (11).

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[Translation done.]

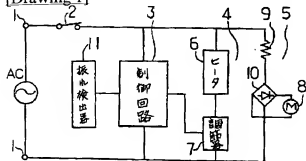
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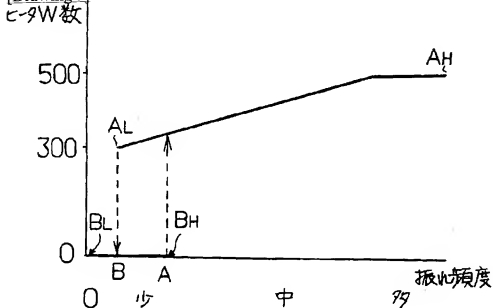
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## DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]